DETAILED ACTION

Claims 2-6, 8, 11 and 13 have been cancelled. Claims 1, 7, 9, 10, 12 and 14-21 are pending for consideration.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 1, 7, 9, 10, 12 and 14-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The independent claims require “wherein the adjustment part is adapted to jet out the compressed air ... to the vacuum leak generation part" (e.g., claim 1, lines 28-30). As described at p. 7 lines 14-17, table 2, work receiving openings 5, and the table base 3 with vacuum suction channels 7 constitute the "vacuum leak adjustment part". As can be seen in FIG 4(b), vacuum suction channel 7 is connected to vacuum pipe 9, and as shown in FIG 1, vacuum pipe 9 is connected to compressed air source 20.

However, the independent claims have been amended to require “a jetting nozzle is disposed in a working region to penetrate through the table base, for jetting the

compressed air to the work receiving openings..." The problem lies in that, as explained above, "the compressed air" is connected to vacuum suction channel 7 (via vacuum pipe 9), and NOT to the jetting nozzle (11). Thus, supply of "the compressed air" through the vacuum leak generation part as claimed would not reach the jetting nozzle as also claimed.

It appears that the specification at page 6, last paragraph, may shed light on this problem. The passage explains that "jetting nozzle 11 is connected to a compressed air controlling means (not shown) via a compressed air pipe 12."

3. Claims 1, 7, 9, 10, 12 and 14-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As similarly explained above, the original disclosure provides inadequate guidance to enable one of skill to make and use a vacuum suction system "wherein the adjustment part is adapted to jet out the compressed air ... to the vacuum leak generation part" (e.g., claim 1 lines 28-30), and "wherein a jetting nozzle is disposed ... for jetting the compressed air to the work receiving openings" (e.g., claim 1 lines 42-44).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 7, 9, 10, 12 and 14-21 as understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Garcia (US 5,842,579) in view of Mori (US 5,191,218) and Miyamoto (US 6,220,481).

Regarding claim 1, Garcia discloses a vacuum suction system comprising:

a vacuum leak generation part (device of FIG 6),

a vacuum generation mechanism (the "low pressure source", see col. 4 line 13) connected to the vacuum leak generation part,

wherein the vacuum leak generation part (see FIG 6) includes:

a table base (9) disposed on a side of the vacuum generation mechanism,

a circular-shaped vacuum suction channel (11),

a conveyor table (8) rotatably mounted on the table base (member 8 rotates while member 9 is stationary; see col. 3 lines 45-46 and col. 4 line 2), and

a plurality of work receiving openings (10) penetrating through the conveyor table (8) (see FIG 6) for receiving works therein (such as members 12), the work receiving openings (10) being spaced apart from each other and arranged in a circular pattern (see FIG 4),

each work receiving opening (10) being disposed inwardly or outwardly in a radial direction relative to the vacuum suction channel (11),

each work receiving opening (10) being connected to the vacuum suction channel (11) through a minute sectional suction channel (13) provided on the conveyor table (8),

each of the minute sectional suction channels (13) having a longitudinal axis extending in the radial direction from the corresponding work receiving openings to a point that is part way across a width of the circular-shaped vacuum suction channel (see annotated FIG 5 below), thereby providing a pressure resistance when the vacuum generation mechanism is operated (all conduits provide pressure resistance because of frictional losses associated with the contact between flowing fluid and the conduit walls).

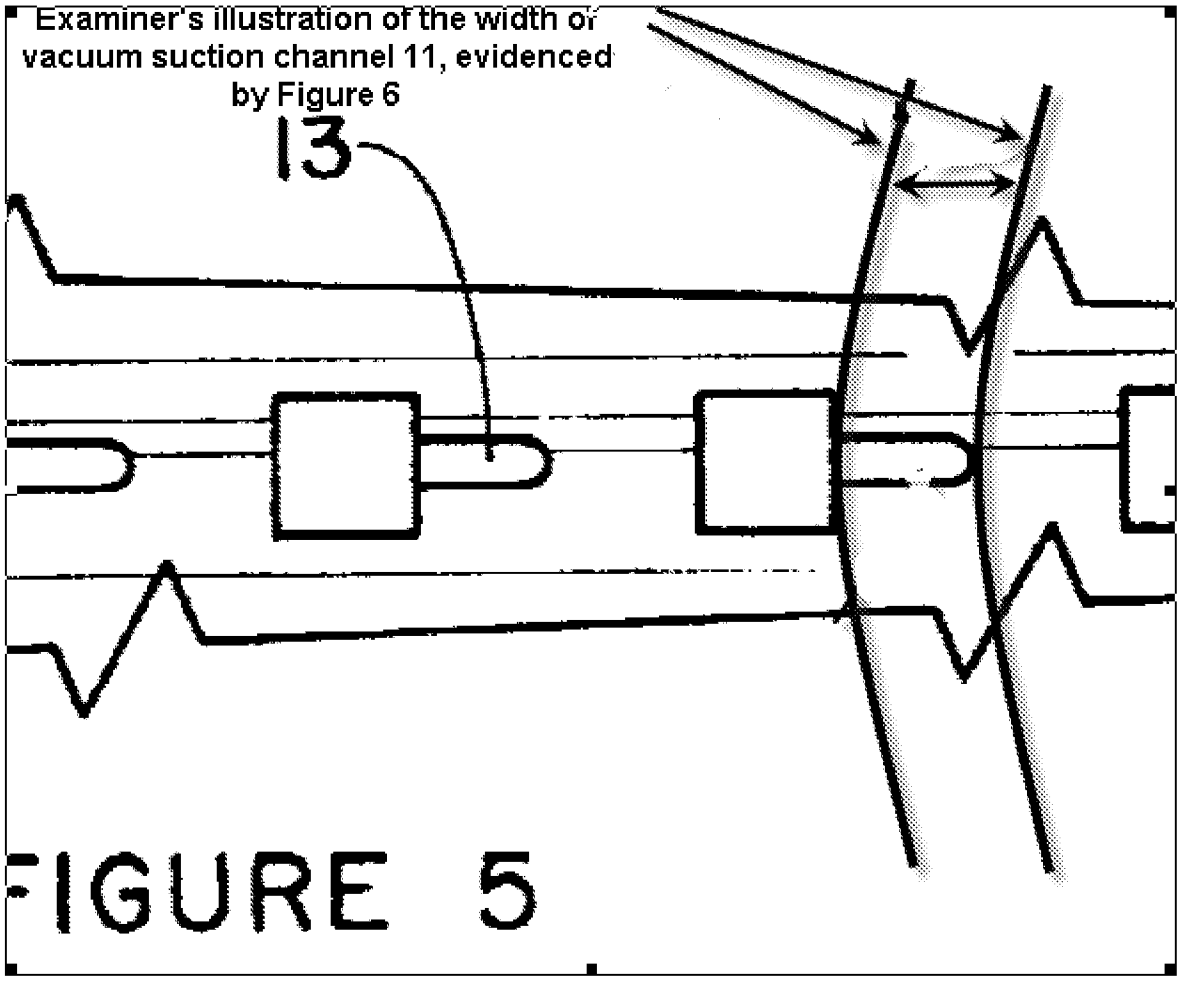

FIGURE 5

Garcia does not disclose the vacuum level adjustment mechanism as claimed. Mori teaches that it was known in the art at the time of invention to employ a vacuum level adjustment mechanism (113a, 114a, 115a-b, 116a, 117, 120; see FIG 6) connected to a similar vacuum leak generation part (106, 111). Mori teaches the vacuum level adjustment mechanism to comprise:

a negative pressure sensor (113a) to detect a vacuum level of similar work receiving openings (106_2) of a similar work table (106),

an adjustment part (115a, 115b) which adjusts the vacuum level of the vacuum leak generation part based on a signal from the negative pressure sensor (col. 9 lines 38-42), and

a compressed gas generation source (116a) for generating compressed gas,

wherein the adjustment part is adapted to jet out the compressed gas from the compressed gas generation source to the vacuum leak generation part based on the signal from the negative pressure sensor (by operation of control valve 115b, see col. 9 lines 30-32 and 38-42), and

wherein the adjustment part (115b) jets out compressed gas based on the signal from the negative pressure sensor when the vacuum level rises above a maximum negative pressure, and stops the compressed gas when the vacuum level falls below a minimum negative pressure,

wherein the minimum and maximum negative pressures are pressures which are less than atmospheric temperature (as understood, Mori's device works in the same way as Applicant's invention),

wherein the minimum negative pressure is closer to atmospheric pressure than the maximum negative pressure, and the maximum negative pressure is a lower absolute pressure than the minimum negative pressure (as is customary for such nomenclature, and as the device has been mapped to the claim above, where pressure in passageway 111 is maintained constant by control of valve 115b based on the pressure sensor reading, see col. 10 lines 23-32).

To more quickly and accurately control the pressure in Garcia's vacuum suction system using proactive feedback control, it would have been obvious to one of ordinary skill in the art at the time of invention to supplement Garcia's vacuum suction system with a vacuum level adjustment mechanism, as taught by Mori.

Note that Garcia's vacuum suction system would have necessarily resulted in the maximum negative pressure being determined by an increased work load rate and the minimum negative pressure being determined by a decreased work load rate (the addition and removal of work pieces inherently raises and lowers the vacuum level present in the system, since this effects the number of openings which are exposed to atmospheric pressure).

Mori does not disclose the compressed gas to be air. However, expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim (see MPEP 2115). It also would have been obvious to decrease the cost of operating the Garcia-Mori system by using air as the compressed gas rather than helium, since Garcia teaches that air is suitable for use in his system (throughout the specification).

Garcia does not disclose the longitudinal axis of the minute sectional suction channels to extend only to a point that is part way across a width of the circular-shaped

vacuum suction channel. That is, Garcia discloses the longitudinal axis of the minute sectional suction channels to extend entirely across the width of the circular-shaped vacuum suction channel (see annotated Figure 5 above). Miyamoto teaches that it was known in the art to utilize a minute sectional suction channel that extends only to a point that is part way across a width of a vacuum suction channel (53) (see FIG 7). To increase the rigidity and structural integrity of Garcia's conveyor table, it would have been obvious to utilize minute sectional suction channels that extend only part way across the width of the vacuum suction channel, as taught by Miyamoto. As such, the structure that defines the extent of the minute sectional suction channel would constitute the claimed nozzle, since it would serve to restrict and accelerate flow therethrough. Further, this nozzle could be used for jetting the compressed air to the work receiving openings to discharge the work in the work receiving openings as claimed. Note that the limitation "wherein the works are discharged smoothly and securely by the compressed air from the jetting nozzle, regardless of suction power from the vacuum suction channel determined by the work load rate" is directed to the effect of an intended use, and Garcia's device would be capable of being used as intended since such an effect would be a function of the shape and size of a particular workpiece.

The method of claims 7 and 9 would necessarily be performed during the normal and usual operation of Garcia's vacuum suction system as supplemented with Mori's vacuum adjustment mechanism (the obviousness analysis regarding the use of air is incorporated by reference). (Regarding claim 9, the release of compressed air

inherently occurs intermittently, for otherwise there would be no need for Mori's valve 115b.)

Regarding claims 10 and 12, the combinatorial apparatus would maintain the vacuum level of the work openings regardless of the work load rate. This is what Mori's feedback vacuum pressure control adjustment mechanism is designed to do (see col. 10 lines 28-32).

Regarding claims 14 and 18, Garcia discloses each work receiving openings in the circular pattern to be spaced apart in a radial direction relative to the vacuum suction channel (see FIG 4).

Regarding claims 15 and 19, Garcia discloses each of the minute sectional suction channels to connect the corresponding work receiving opening to the vacuum suction channel, which is spaced apart in the radial direction from the work receiving openings (see FIG 5).

Regarding claims 16 and 20, Garcia as modified by Miyamoto discloses each of the minute sectional suction channels to have a length which is less than a distance in the radial direction separating the corresponding work receiving openings and the vacuum suction channel plus the width of the vacuum suction channel (inherent to the use of a

minute sectional suction channel as taught by Miyamoto in Garcia's system, as can be seen in Garcia's FIG 5).

Regarding claims 17 and 21, Garcia discloses the circular- shaped vacuum suction channel to include a first and a second circular-shaped vacuum suction channel which are spaced apart form each other in the radial direction (see FIG 5 in light of FIG 4), and the work receiving openings to be spaced apart from each other and are arranged in two circular patterns (see FIG 4), both of which are located between the first and the second circular-shaped vacuum suction channels (several concentric circles are disclosed by Garcia in FIG 4).

Response to Arguments

6. Applicant's arguments regarding the newly added claim limitations (Remarks, pp. 14-15) have been considered but are moot in view of the new ground(s) of rejection. Miyamoto discloses the minute sectional suction channel and nozzle as claimed and argued.

7. In response to applicant's arguments against the references individually (Remarks, pp. 16-18), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

8. It is noted that a telephonic interview was held with Mr. Carl Thomson on 8/13/2010 to discuss the issues identified in the rejection under §112, 1st ¶ above. The corresponding interview summary is attached hereto.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM MCCALISTER whose telephone number is (571)270-1869. The examiner can normally be reached on m-f, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Hepperle can be reached on (571)270-4913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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8/13/2010